



HIV Epidemiology Across the Disease Spectrum, Part I: Monitored Viral Load

Miranda Fanning, MPH

Data Reporting Manager, TB/HIV/STD Epidemiology and
Surveillance

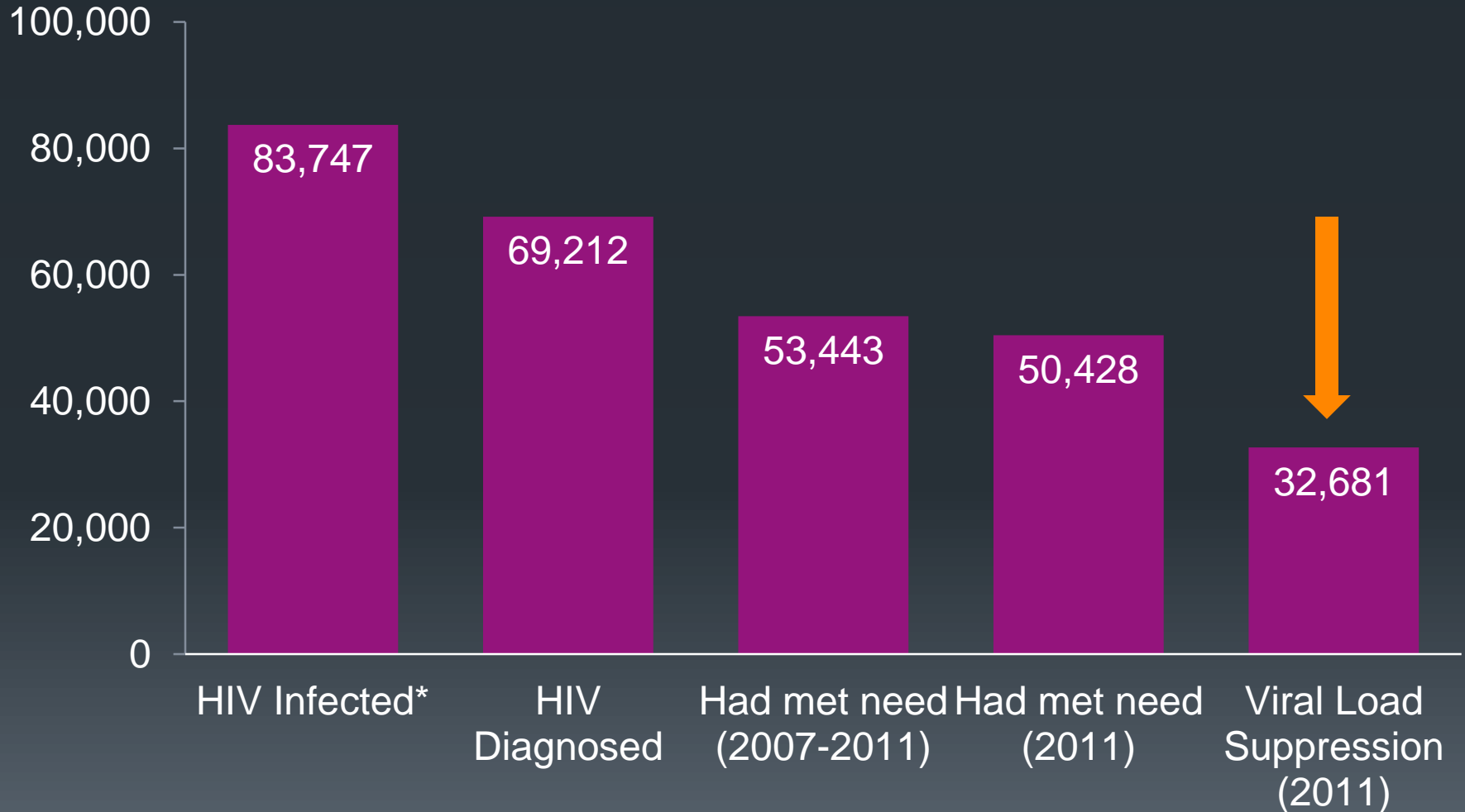
Texas Department of State Health Services



Overview

- Overview of Viral load Measures
- Monitored Viral Load Patterns in Texas
- Limitations
- Future Directions

Treatment Cascade Texans, 2011



* HIV infected include diagnosed cases and undiagnosed cases

Understanding Viral Load

- Laboratory test to monitor HIV disease
- Lower Viral Load Better for Patient:
 - Better health outcomes
 - Extended life
 - Reduced chance of transmitting HIV
- Lower Viral Load Better for Community:
 - Strategy for reducing new HIV infections
 - Measures HIV related health disparities for National HIV/AIDS Strategy

Viral load evaluation measures

Population Viral Load

A. In care and with undetectable VL

B. In care with detectable VL

C. In care, no VL

D. Diagnosed but not in care*

E. Undiagnosed

Community Viral Load

A. In care and with undetectable VL

B. In care with detectable VL

C. In care, no VL

D. Diagnosed but not in care*

In-Care Viral Load

A. In care and with undetectable VL

B. In care with detectable VL

C. In care, no VL

Monitored Viral Load

A. In care and with undetectable VL

B. In care with detectable VL

Ways to Analyze Monitored VL

Total Viral Load

$$10,000 + 10,000 + 199 + 50 = 20,249$$

Mean Viral Load

$$\left(10,000 + 10,000 + 199 + 50 \right) / 4 = 5,062$$

Geometric Mean Viral Load

$$\sqrt[4]{10,000 \times 10,000 \times 199 \times 50} = 999$$

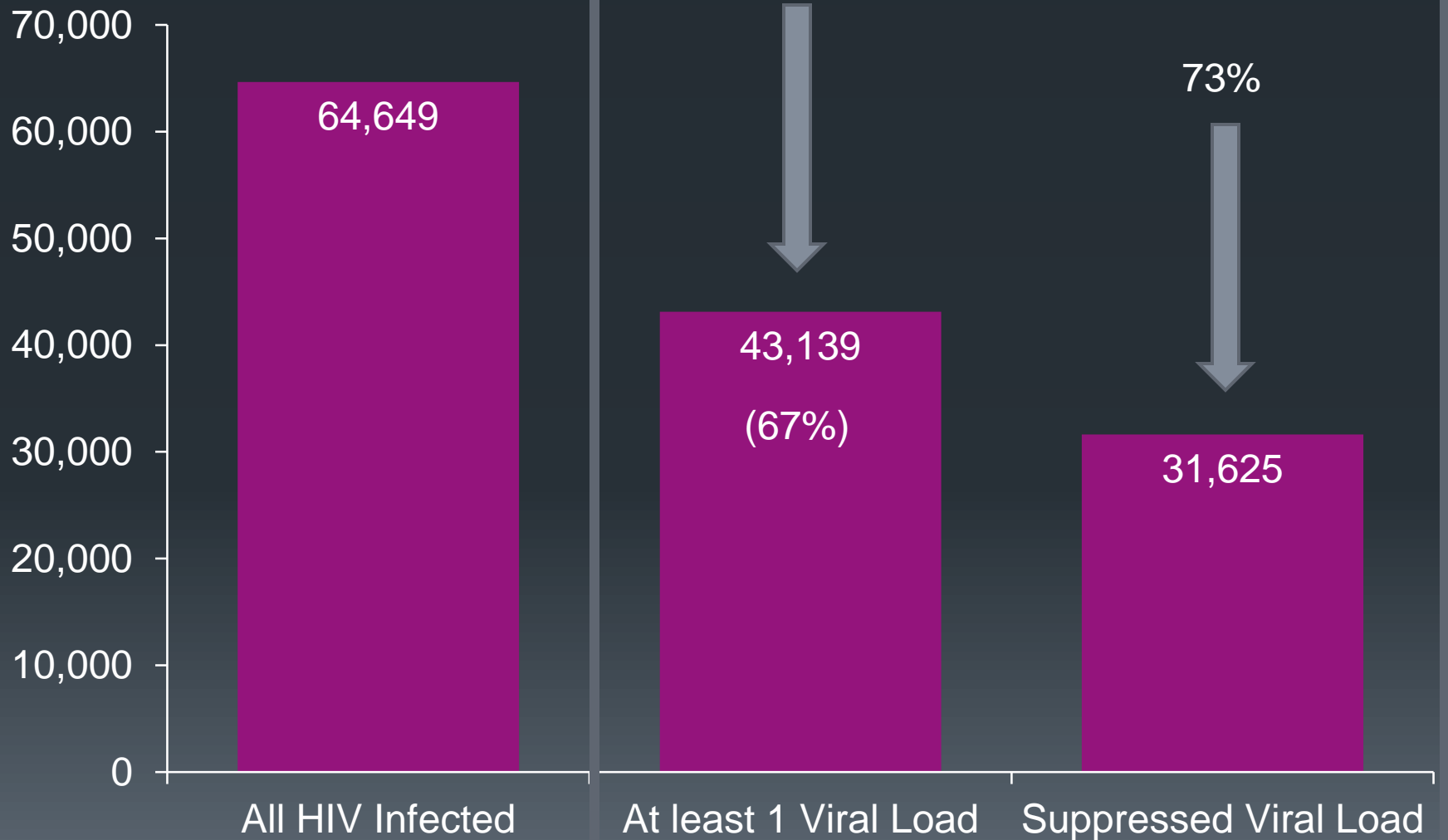
Proportion w/ Suppressed Viral Load

$$10,000 \quad 10,000 \quad 199 \quad 50 = 50\%$$

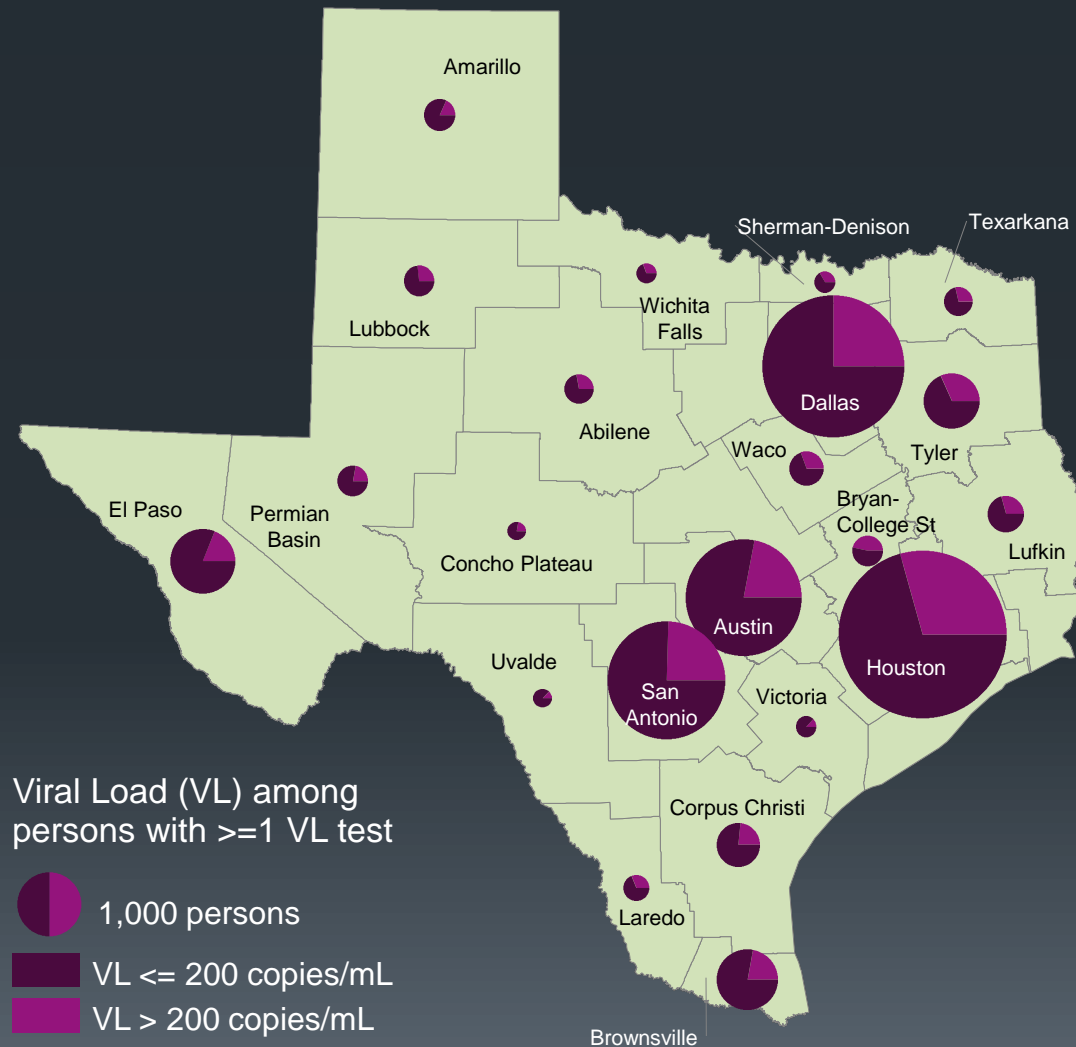
Methods

- Datasets: Enhanced HIV AIDS Reporting System (eHARS) and reported laboratory data
- Inclusion criteria:
 - Adults and Adolescents (13 and over)
 - At least one viral load in 2011
 - Residing in Texas
 - Diagnosed with HIV prior to 2011
 - Living at the end of 2011
- Geographic information based on last known address
- If multiple viral loads available, used most recent value
- Viral load suppression: <200/ml

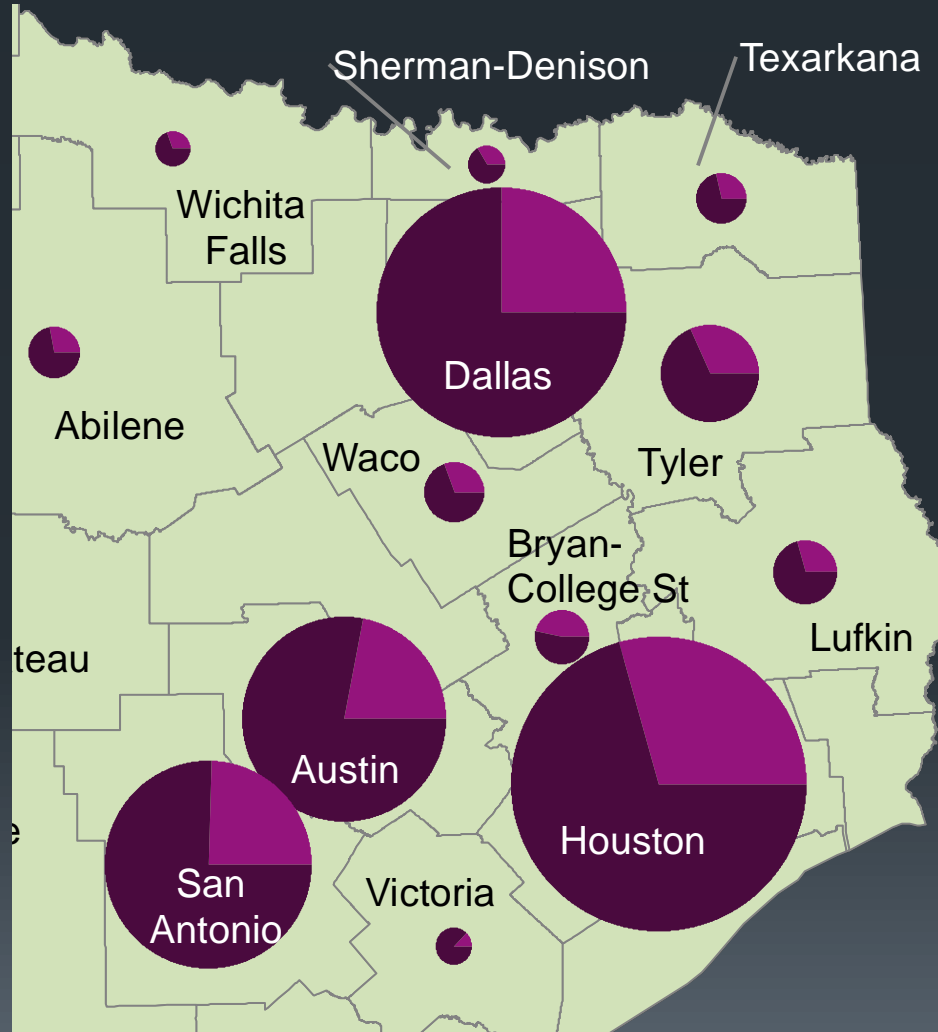
2011 Texas HIV Cases with Viral Loads



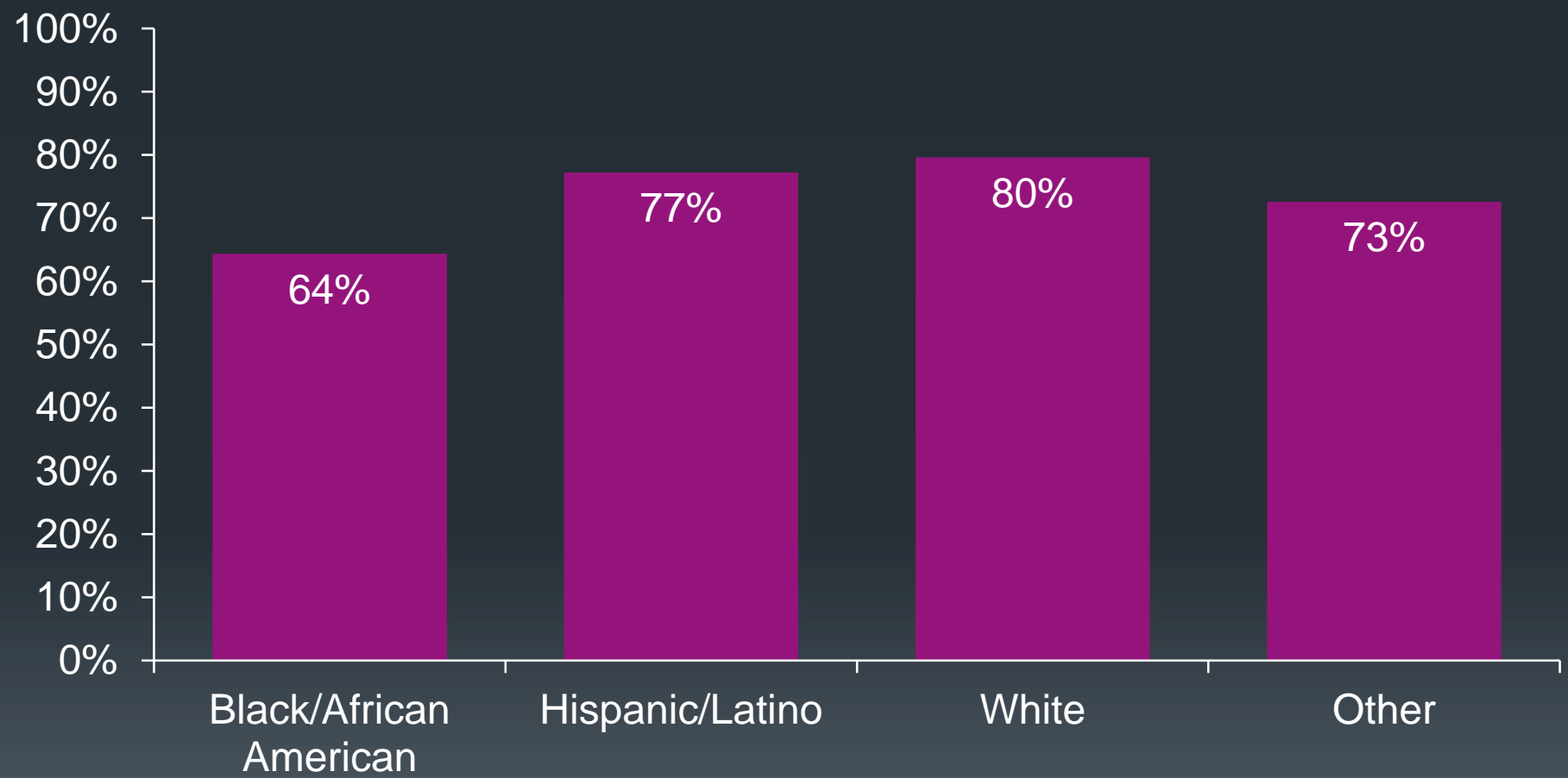
Proportion of HIV Patients with Viral Suppression by Health Service Delivery Area



Proportion of HIV Patients with Viral Suppression by HSDA- East Texas



Proportion of HIV Patients with Viral Suppression by Race/Ethnicity

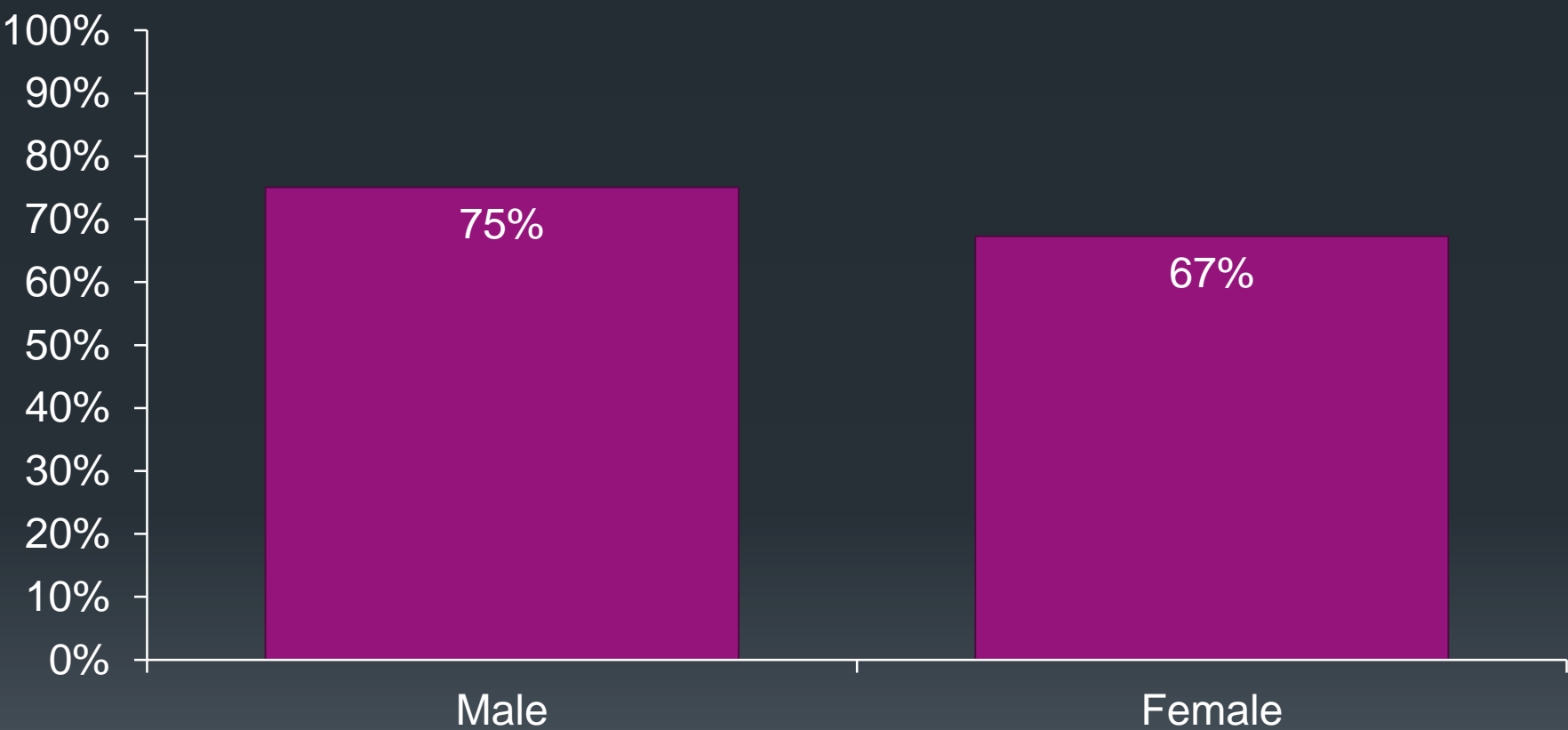


<200 VL	10,025	8,992	11,901	707
Total	15,573	11,646	14,946	974

National HIV/AIDS Strategy Viral Suppression-Race

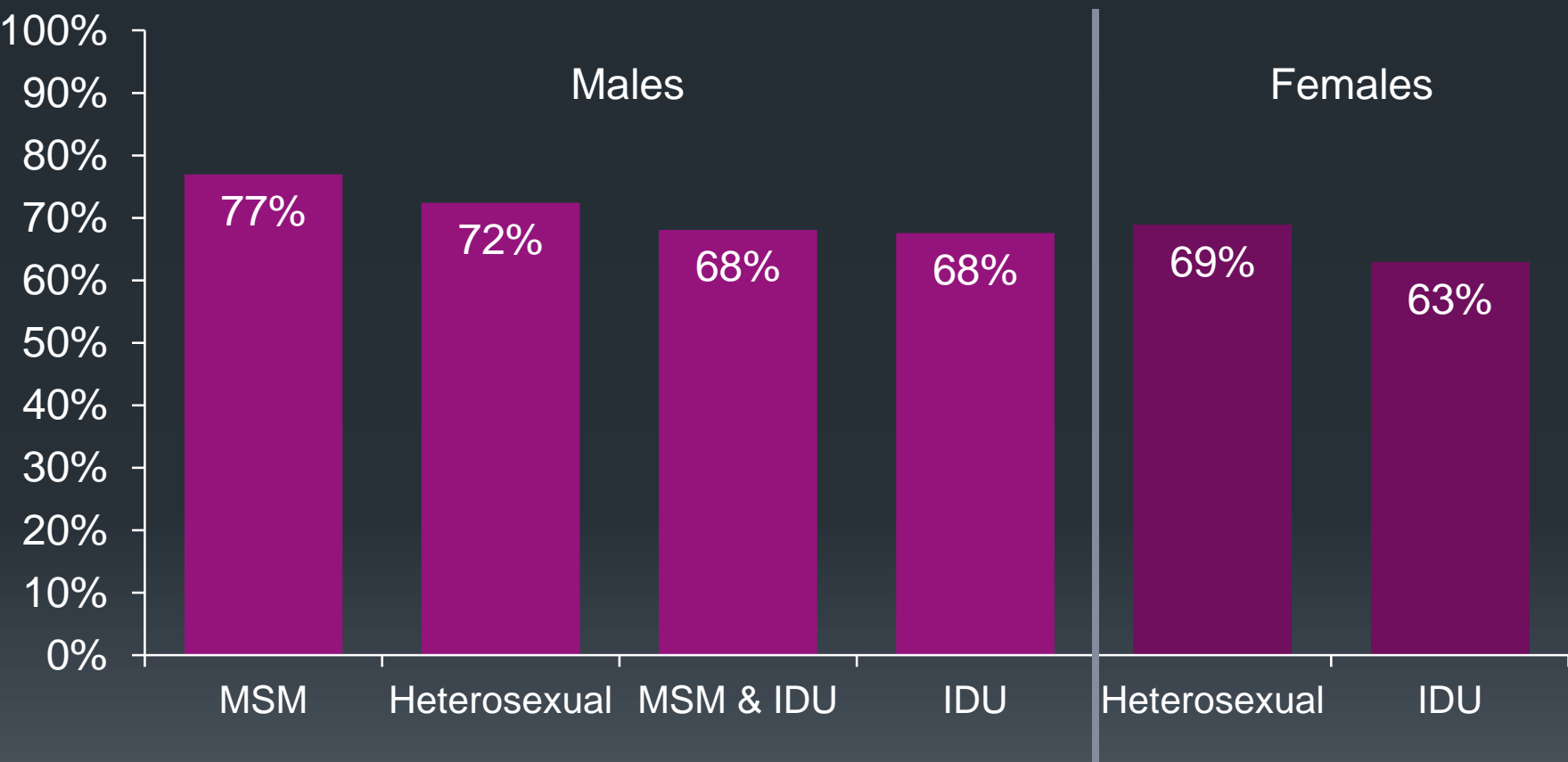
- 2015: Increase the proportion of HIV diagnosed Blacks and Hispanics with undetectable viral loads by 20%
- Increase Viral Suppression:
 - Approximately 1,500 more Black HIV patients
 - Approximately 1,600 more Hispanic HIV patients

Proportion of HIV Patients with Viral Suppression by Sex



<200 VL	25,089	6,536
Total	33,428	9,711

Proportion of HIV Patients with Viral Suppression by Transmission Category



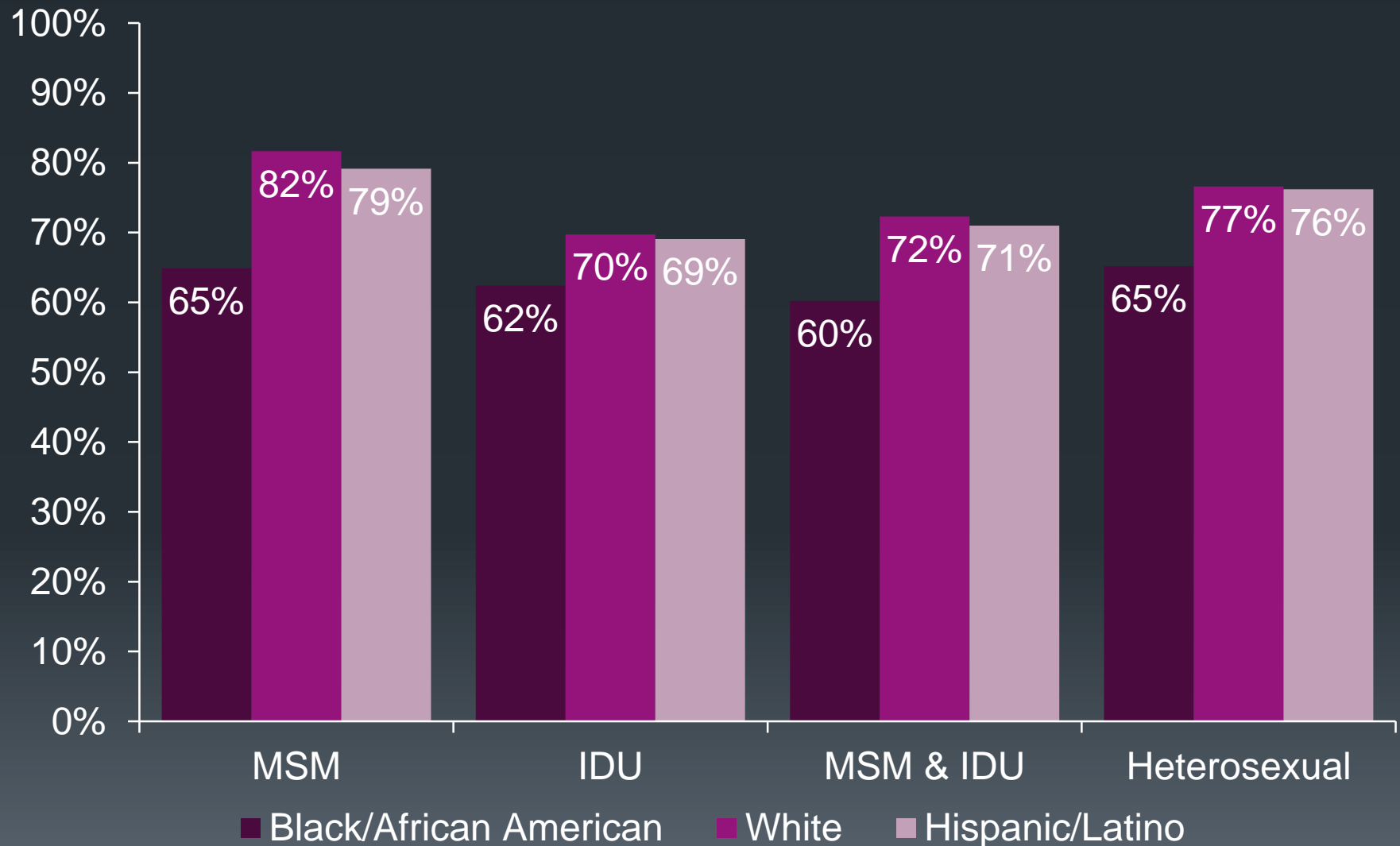
<200 VL	17,463	1,779	1,590	1,588	3,766	1,026
Total	22,691	2,456	2,336	2,351	5,474	1,631

Viral load suppression and the National HIV/AIDS Strategy- MSM

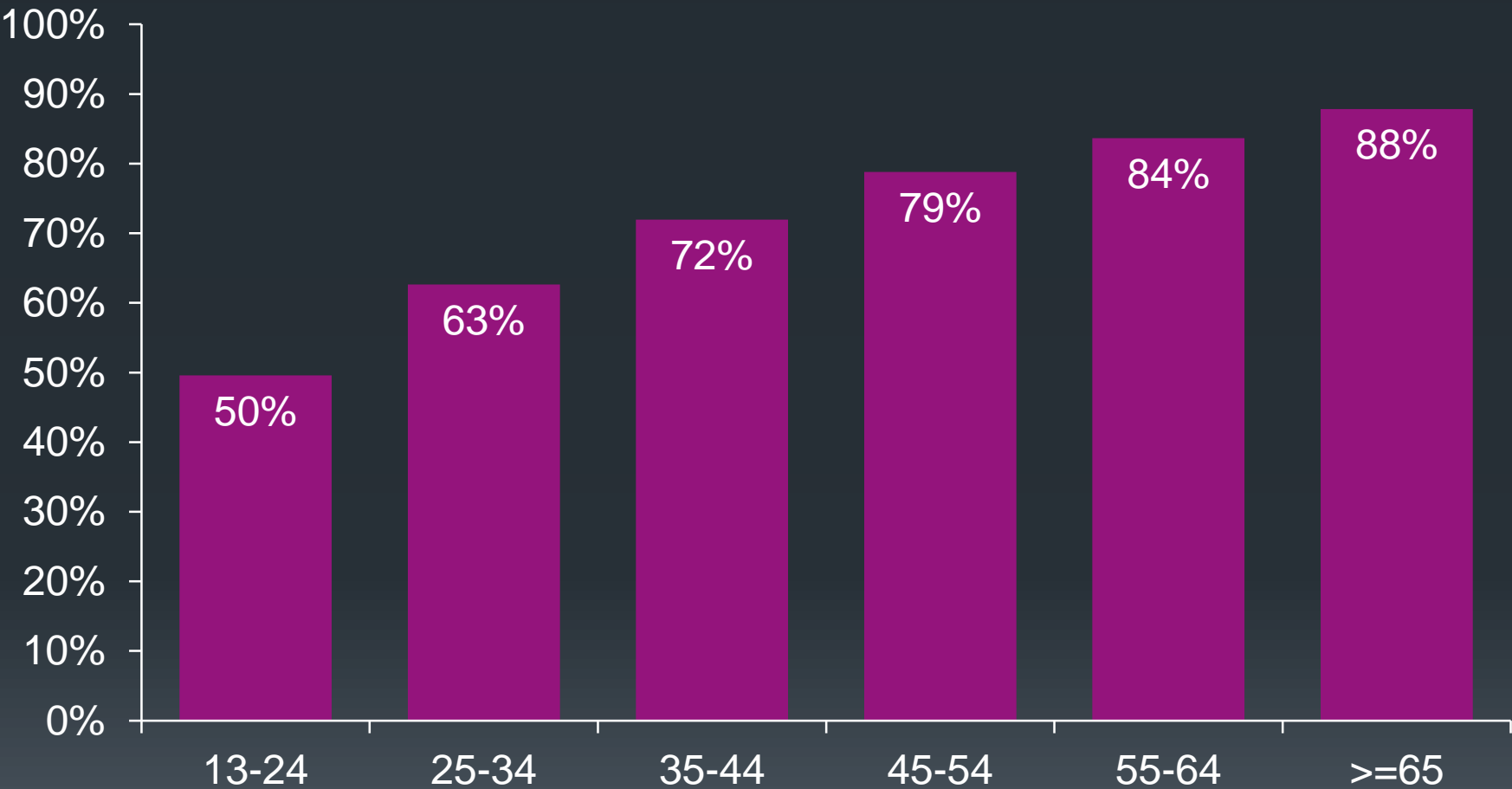


- 2015: “Increase the proportion of HIV-diagnosed gay and bisexual men with undetectable viral load by 20%”
- Approximately 3,500 more MSM’s virally suppressed

Proportion of HIV Patients with Viral Suppression by Race and Transmission Mode

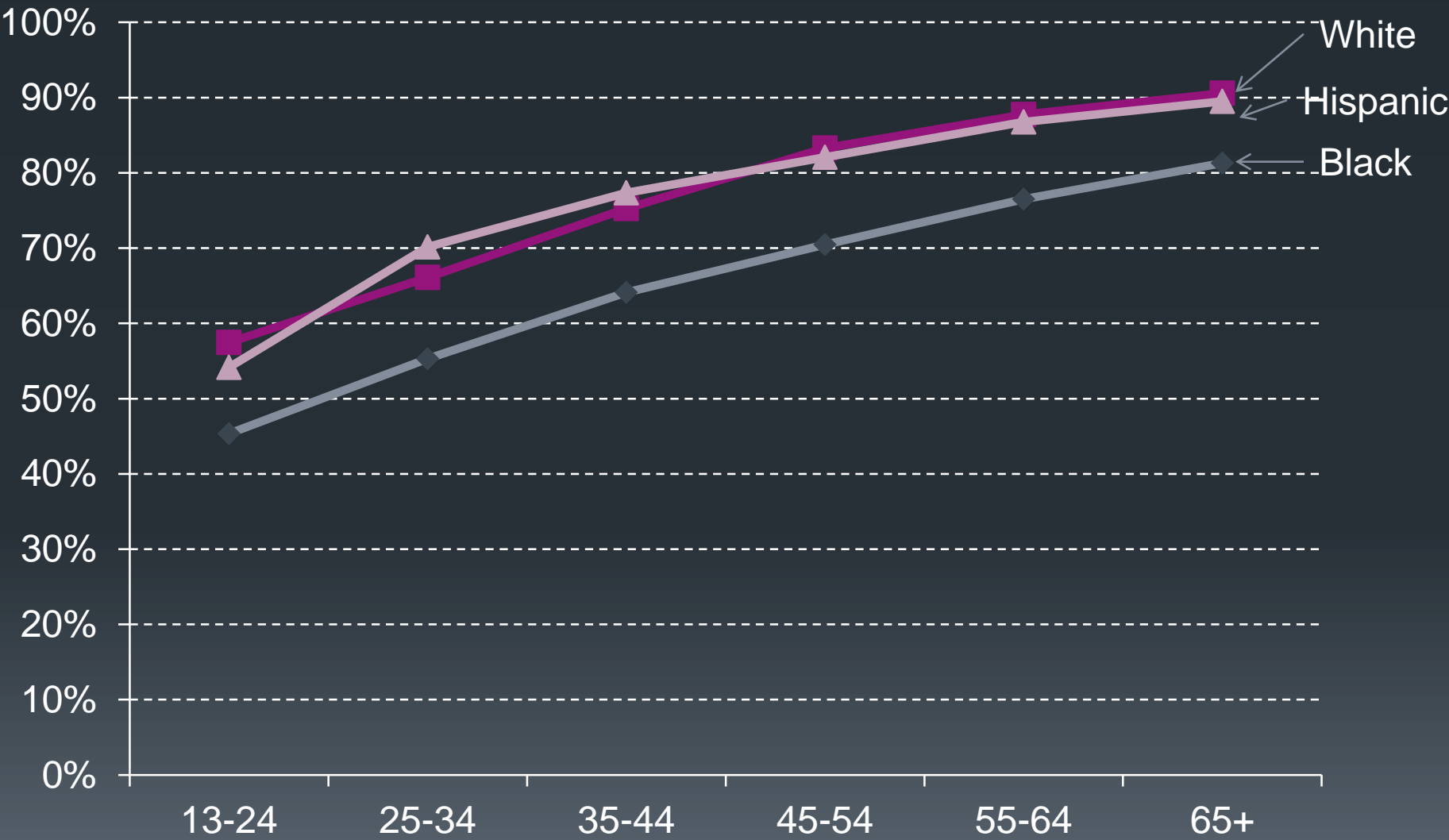


Proportion of HIV Patients with Viral Suppression by Current Age



<200 VL	1,112	4,645	9,011	11,473	4,352	952
Total	2,242	7,417	12,637	14,557	5,202	1,084

Proportion of HIV Patients with Viral Suppression by Current Age and Race



Summary

- Texas viral suppression similar to other studies
- Less viral suppression in:
 - East Texas
 - Black/African Americans
 - Women
 - Injection drug users

Summary

- The proportion of cases with suppressed viral load increases with age
- Half of people between 13 and 24 do not have a suppressed viral load
- Only 43% of Black/African Americans between 13 and 24 have suppressed viral load

Limitations

- Inadequate electronic laboratory reporting from some hospital based laboratories
- Limited to analyzing the population of people in care
- Still exploring ways to analyze and interpret viral load information

Future Directions

- Direct activities to improve populations with less viral load suppression
- Identify best methods to address getting people into care or retaining in care by identified populations
- Develop population based interventions focused on identified populations
- Provide data to care providers and collaborate on strategies to address population outcomes on the local level



Future evaluation

- Evaluate:
 - Trends over time
 - Viral load suppression in populations targeted by linkage to care/ retention in care activities
- Explore opportunities to evaluate community viral load



Thank You

Miranda Fanning

Miranda.Fanning@dshs.state.tx.us

512-533-3054

Understanding the Geometric Mean

- **Geometric Mean** is nth root of product of data values (n)
- To find the geometric mean, multiply all numbers in the data set together and then take the nth root of this product where n is the number of values in the data set
- Formula:

$$x_G = \sqrt[n]{x_1 \cdot x_2 \cdot \dots \cdot x_n} = \left(\prod_{i=1}^n x_i \right)^{\frac{1}{n}}$$